

What is claimed:

1. A lift adjustment device for a valve mechanism connected by a plurality of links to a valve cam that contacts and lifts intake/exhaust valves and a rotating drive shaft connected to a crankshaft, the device comprising:

a connector pin, inserted into two of the plurality of links, that connects both links and allows for their relative rotation; and

a lift adjustment means wherein the connector pin position is adjustable from a single direction using a prescribed adjustment tool.

2. The valve mechanism lift adjustment device described in claim 1, wherein the drive shaft is rotatably supported above cylinder heads and provides for each cylinder row, comprised of a plurality of cylinders, and the valve mechanism provided for each of the plurality of cylinders that comprise a cylinder row such that portions into which the adjustment tools mate or are inserted into a link are set at a position that is higher than an upper surface of the cylinder heads for all cylinders comprising a cylinder row, at least when the drive shaft is in a prescribed rotational position.

3. The valve mechanism lift adjustment device described in claim 2 wherein the drive shaft provided for a cylinder row, comprised of a plurality of cylinders and the valve mechanism provided for each of a plurality of cylinders that comprise a cylinder row wherein the single direction provided such that the direction is oriented essentially from upper engine to lower engine for all cylinders comprising a cylinder row, at least when the drive shaft is in a prescribed rotational position.

4. The valve mechanism lift adjustment device described in claim 1, and further comprising:

a pin guide hole into which the connector pin, which is radially moveable in a prescribed adjustment direction, mates at the pin mating portion on one of the two links; and the lift adjustment means that is provided with a pair of holders, first holder and second holder, that sandwich and hold the connector pin in the adjustment direction, with the position of the connector pin being adjusted by adjusting the first holder and

second holder wherein a configuration in which positional adjustment of the first holder and second holder is performed from the single direction.

5. The valve mechanism lift adjustment device described in claim 1, and further comprising:

first and second holder mating holes that extend along the adjustment direction at the pin mating portion, with an end open to the pin guide hole, and into which the first and second holders are screwed;

a first tool-mating portion formed at one end of the first holder to which first adjustment tool mates and turns the first holder; and

a second tool-mating portion formed at one end of the second holder to which second adjustment tool mates and turns the second holder wherein tool insertion holes penetration-formed to allow the second adjustment tool to be inserted through the first holder and the connector pin.

6. The valve mechanism lift adjustment device described in claim 5 and further comprising a bearing, placed between the holders and connector pin, that rotatably supports the connector pin, and at the same time mates with the pin guide hole and is moveable in the adjustment direction together with the connector pin.

7. The valve mechanism lift adjustment device described in claim 1, and further comprising:

an eccentric drive shaft portion located eccentrically to the drive shaft, a control shaft, an eccentric control shaft portion located eccentrically to the control shaft, a rocker arm rotatably supported to the eccentric control shaft portion, a first link that links one end of the rocker arm and the eccentric drive shaft portion, a second link that links the other end of the rocker arm and the valve cam, and an actuator that changes and maintains the rotational position of the control shaft to adjust the valve lift characteristics of the intake and exhaust valves wherein the connector pin is rotatably connected to the rocker arm and the second link.

8. A valve mechanism lift adjustment method in which a plurality of links link a rotating drive shaft connected to a crankshaft with a valve cam that contacts and lifts intake/exhaust valves, and a connector pin inserted into two of the plurality of links that connects both and enables their relative rotation, the method comprising:

taking valve lift measurements when the valve mechanism is in an assembled state, and

adjusting the amount of intake and exhaust valve lift, based on the valve lift measurement results, by adjusting the position of the connector pin from a single direction using a prescribed adjustment tool when the drive shaft is set at a prescribed rotational position.

9. A lift adjustment device for a valve mechanism connected by a plurality of links to a valve cam that contacts and moves intake/exhaust valves and a rotating drive shaft connected to a crankshaft, the device comprising:

a connector pin, insertable into a first and a second link of the plurality of links, that connects both links and allows for their relative rotation, the connector pin having an opening;

a threaded first holder that is insertable into a first threaded hole of the first link under and immediately adjacent to the connector pin, the first holder having an opening adapted to accept an adjustment tool, the first holder opening substantially aligning with the connector pin opening when the first holder is screwed into the first threaded hole; and

a threaded second holder comprising an opening that extends the length of the second holder, the second holder insertable into a second threaded hole of the first link above and adjacent to the connector pin such that the second holder opening aligns with the connector pin opening and the first holder opening allowing insertion of the adjustment tool through the second holder.

10. The lift adjustment device described in claim 9 wherein the adjustment tool is adapted to turn the first holder within the first threaded hole to adjust the connector pin

position in the first link thereby changing a position of the second link with respect to the first link.

11. The lift adjustment device described in claim 9 wherein the connector pin is movable in a first direction in the first link but substantially immovable in the first direction in the second link.

12. The lift adjustment device described in claim 9 wherein the second holder is adapted to be screwed into the second threaded hole to contact the connector pin after lift adjustment has been made.

13. The lift adjustment device described in claim 9 wherein the connector pin further comprises a first seat surface that contacts the first holder and a second seat surface that contact the second holder.

14. The lift adjustment device described in claim 9 wherein the first link further comprises a bearing portion into which a control shaft portion can be rotatably mated.

15. The lift adjustment device described in claim 14 wherein the bearing portion further comprises an oil hole for admitting lubrication for the bearing surface.

16. The lift adjustment device described in claim 9 wherein the threaded second holder further comprises a bolt head that is adapted to be turned by a wrench.

17. The lift adjustment device described in claim 9 wherein the first holder is adapted to be screwed further into the first link, in response to the adjustment tool, to move the connector pin in a first direction in the first link.

18. A lift adjustment device for a valve mechanism connected by a plurality of links to a valve cam that contacts and lifts intake/exhaust valves and a rotating drive shaft connected to a crankshaft, the device comprising:

a connector pin, adapted to be inserted into a first link and a second link of the plurality of links, to couple the first and second links and allow for their relative rotation; and

an adjustment device insertable into the first link to contact the connector pin such that the connector pin position is adjustable from a single direction in response to an adjustment tool and the adjustment device.

19. A method for adjusting a valve lift mechanism in which a plurality of links link a rotating drive shaft connected to a crankshaft with a valve cam that contacts and lifts intake/exhaust valves, and a connector pin inserted into two of the plurality of links that connects both and enables their relative rotation, the method comprising:

determining valve lift measurements; and

adjusting, in a single direction, a first holder such that the connector pin moves along the single direction a predetermined distance in response to the lift measurement; and

adjusting a second holder over the connector pin such that the connector pin is substantially immobilized in the single direction.